

REMARKS

Status of Claims:

Claims 11 and 33 have been cancelled. Thus claims 1-32 and 34-46 remain for examination.

Drawing Changes:

As requested by the examiner, Replacement Sheets are submitted herewith showing Figs. 25 and 26 as "Prior Art."

Abstract:

A new Abstract is submitted in compliance with paragraph 1 of the outstanding office action.

Section 112 Rejections:

The claims stand rejected under 35 U.S.C. 112 for the reasons stated in paragraph 4 of the outstanding office action. By way of the instant amendment, each and every ground of rejection has been considered and the claim amended to remove the basis of the rejection. As to point (29), [claim 34], applicant notes that support for the phrase "buffer" appears in the preamble.

Prior Art Rejection:

Claims 1-5, 23-27 and 45 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kato (6,151,360). Claims 6-8 and 28-30 stand rejected Under 35 U.S.C. § 103 as unpatentable over Kato in view of Kando (6,625,322). Further, claims 9-16, 20-22, 31-38, 42-44 and 46 stand rejected under 35 U.S.C. § 103 as unpatentable over Kato in view of Wang (6,167,084). Finally, claims 17-19 and 39-41 stand rejected under 35 U.S.C. § 103 as unpatentable over Kato and Wang and further in view of Kando.

The Examiner's rejections are respectfully traversed.

The present invention not only observes and controls the actual buffer occupancy quantity during coding, but also regulates the target code quantity, and the characteristic thereof lies in predicting a transition of the buffer capacity, thereby to regulate the code quantity for assignment at the moment of its regulation. (See, for example, page 24, lines 15-23 and figures 4 and 5, and page 25, line 23 to page 27, line 25)

In the cited Kato reference, the actual buffer occupancy quantity is observed during coding only to control the quantization step size so as not to give rise to an overflow or an underflow, and the target code quantity is not regulated (column 10, lines 20-32). The code quantity assignment in Kato, which is merely an assignment to be calculated from the characteristic quantity of the image, does not take the buffer occupancy quantity into consideration (column 7, lines 25-35). That is in regulating the target code quantity, predicting a transition of the buffer capacity, thereby to regulate an assignment, which characterizes the present invention, is not performed.

On the other hand, the present invention allows a control by means of the buffer occupancy quantity during the actual coding to be suppressed because a code quantity assignment is made such that a buffer constrain can be observed in advance, which enables the code quantity to be controlled according to the target code quantity more securely. Thereby, the number of times that a code quantity is assigned which is different from the code quantity, which should be originally assigned, is low, which brings about the excellent effect in that a coding control can be realized with a more appropriate assignment code quantity and a deterioration in image quality due to coding can be suppressed (page 82, line 21 to page 83, line 11). Also it was described in the specification of the present invention that in the conventional examples, a buffer failure avoiding process was performed, thereby obtaining the code quantity short of a target of the quantity, which led to a deterioration in image quality in some cases (page 3, line 24 to page 4 line 15).

In order to make the difference between the invention and Kato more clear, applicant has amended the claims by clarifying the fact that as to the control for observing the buffer constrain, not only the actual buffer occupancy quantity is observed and controlled during coding, but also a transition of the buffer capacity is predicted in advance, thereby to regulate a code quantity assignment in setting the target code quantity.

Claim 1 has thus been amended as underlined below:

1 (Currently Amended) A moving image coding device
that makes a compression and coding for moving images, said
image coding device comprising:

means for analyzing images, which exist in a constant interval,
to observe characteristics of each image;

based on said observed characteristics, means for estimating
complexity degrees of said images;

means for pre-allocating a code quantity to said constant
interval, and computing a target code quantity with which said
pre-allocated code quantity is assigned to each image for all
images within said constant interval based on said estimated
complexity degrees;

a buffer which accumulates a code that is generated as a result
of having coded said images;

when said computed target code quantity is assigned to each of
said images, means for predicting a transition of occupancy in
said buffer of said accumulated code with said computed target
code quantity and regulating said target code quantity so that
the predicted transition of the buffer occupancy does not give
rise to an overflow or an underflow; and

means for making a compression and coding for said images
according to said regulated target code quantity.

The above-mentioned amendment was made according to the description in the
specification on page 24, line 15 to page 27, line 25.

Similar changes have been made to all of applicant's independent claims. As such, it is submitted that none of the prior art either anticipates or makes obvious applicant's invention. Simply stated, the Patent and Trademark Office has not made out a *prim facie* case of obviousness under the provisions of 35 U.S.C. § 103.

Applicant's dependent claims are deemed to be patentable by virtue of their dependency on the above-discussed independent claims.

Conclusions:

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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